Instruction manual

VWR® Vacuum Aspiration System

EU cat. no 181-0658 4L Vacuum Aspiration System
181-0659 2L Vacuum Aspiration System

Version 02 Issue 12/29/2025

Legal address of Manufacturer

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Country of Origin

China

Table of Contents

Safety Information

Please follow the guidelines below and read this manual in its entirety to ensure safe operation of the unit.
The Manufacturer recommends the following guidelines for the use of the Device:

- The inside of the device contains high-voltage components. Adequate precautions must be taken, and the device must be handled by trained personnel only.
- Do not disassemble the device.
- Disconnect the device from the mains supply before carrying out maintenance work or changing the fuses.
- Do not use the device if it is damaged, especially if the main power cable is damaged or defective.
- Repairs may only be carried out by the service technicians from your local VWR office and authorized service partners.
- The device must be connected to a power outlet that has a protective ground connection.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- Do not allow liquid to enter the control unit.
- Do not operate the device in a hazardous location or potentially explosive environment.

Package Contents

Package Contents	181-0658（4L）	181-0659 (2L)
Main Unit	1pc	1pc
User Manual	1pc	1pc
Short User Manual	1pc	1pc
Vacuum Bottle with cap	1pc (181-0661)	1pc (181-0662)
Hand operator	1pc	1pc
Power Adapter	EU/UK/CH plug	EU/UK/CH plug
Tubing for vacuum	1set	1set
Lid	1pc (with quick release couplings cap)	1pc (with barbed fittings cap)
Tip detrusion adapter 200µl & 1000µl tip	2pcs (181-0664)	2pcs (181-0665)
8-channel tip adapter 200µl tip	1pc (181-0670)	1pc (181-0670)
Single Needle	1set (181-0666,181-0667,181-0668,181-0669)	1set (181-0666,181-0667,181-0668,181-0669)
8 channel needle Φ1.5mm	1pc (181-0671)	1pc (181-0671)
Hydrophobic filter 0.45µm	1pc (181-0663)	1pc (181-0663)
Bottle Adapter（2L）	/	1pc
Bottle handle（4L）	1pc	/
Built-in level sensor cable（4L）	1pc	/

Unpacking

Open the package and check the contents against the packing list. If any part is missing or damaged, contact your local VWR office.

Installation

Placement-Place the Device on a level surface carefully.
Connect the power cord. Ensure that the device power switch is turned off.

Intended use

The Vacuum Aspiration System is designed for laboratory waste recovery and the separation of liquids and solids. It can be widely used in cell culture, DNA extraction, microplate waste removal, and any other liquid separation or recovery.

Symbols and conventions

The following chart is an illustrated glossary of the symbols that are used in this manual.

	**CAUTION** This symbol indicates a potential risk and alerts the user to proceed with caution
	**CAUTION** This symbol indicates the presence of high voltage and warns the user to proceed with caution

Product Specifications

Cat. No.	181-0658	181-0659
Bottle Capacity	4 liters	2 liters
Mains Voltage	100 – 240 VAC, 50/60 Hz, 0.5 A	
Unit Voltage	24V DC, 1A, Center-positive	
Vacuum range	0 to 600 mbar (adjustable)	
Pumping speed	15 L/min (air)	
Aspiration rate	17 mL/s	
Noise	55 dB +/- 5 dB at a distance of 1 meter	
Size (H x W x D)	180x240x450 mm (7.09 x 9.45 x 17.72 in)	180×240×340 mm (7.09 x 9.45 x 13.39 in)
Weight	3.0 kg (6.6 lbs.)	2.8 kg (6.2 lbs.)
Relative humidity	10 to 90% (no condensation)	
Environment	Indoor use only	
Operating Temperature	10 to 40° C (50 to 104° F)	
Altitude	0 to 2,000 m	

Chemical Compatibility

The materials which may contact with liquid consist of POM, PP, FEP, SUS304, NBR (Syringe needle is SUS304, sealing ring is NBR); in which, SUS304 and NBR's Chemical Compatibility is at the low level compare to other parts, so the following Chemical Compatibility list of SUS304 and NBR will show the whole device's Chemical Compatibility @ 20° C.

1. For biological reagents, the devices have good compatibility to almost all the liquid.

2. For chemical reagents, please refer to the below table:

Note: "+" indicates compatible; "–" indicates incompatible.			
Reagent	Compatibility	Reagent	Compatibility
Acetic acid	+	Formic acid	-
Acetaldehyde	-	Gallic acid	-
Acetamide	+	Glycol	+
Acetic anhydride	-	Hydrogen peroxide	-
Acetone70℉(21.1℃)	-	Hydrazine	+
Acetic acid glacial	-	Hydrobromic acid	-
Acetic acid	+	Hydrochloric acid	-
Acrylonitrile	-	Hydrofluoric acid	-
Adipic acid	+	Hydrofluosillicic acid	-
Alcohols	+	Hypochloric acid	-
Aliphatic acid	+	Isopropyl acetate	-
Alkali liquor	+	Isopropyl ether	+
Aluminium nitride	-	Lactic acid	+
Aluminium nitrate	+	Linoleic acid	+
Aluminium potassium sulfate	-	Malic acid	+
Ammonium carbonate	-	Methanol	+
Ammonium hydroxide	-	Methyl acetate	-
Aniline	-	Methyl ethyl ketone	-
Anone	-	N-Amyl acetate	-
Arsenic acid	+	N-Butyl acetate	-
Aqua regia	-	Nitronic acid	-
Benzoic acid	-	Nitroxanthic acid	+
Boric acid	+	Nitric acid	-
Butyl amine	-	Nitramine	+
Butyric acid	-	Oleic acid	-
Calcium hydroxide	+	Palmitic acid	+
Calcium hypochlorite	+	Perchloric acid	-
Calcium nitrite	+	Potassium hydroxide	+
Carbinol	+	Potassium hypochlorite	-
Carbonic acid	+	Propyl acetate	-
Copper sulfate	+	Propanol ethyl carbinol	+

Cupric cyanide	+	Propylene	-
Diacetone alcohol	-	Salicylic acid	+
Diethylamine	+	Sodium acetate	+
Diethylene glycol	+	Sodium hydroxide	+
Diethyl ether	-	Sulfuric acid	-
Dimethylaniline	-	Tetrachloroethylene	-
Dimethylformamide	+	Trichloroacetic acid	-
Ethanolamine	+	Tung oil	+
Ethyl benzenecarboxylate	-	Zinc sulfate	+
Ether	-		

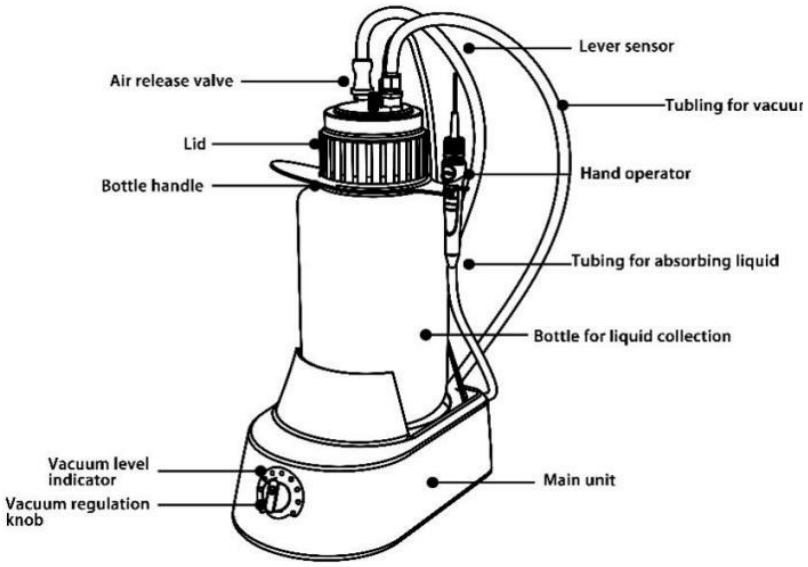
3. Main Parts Material

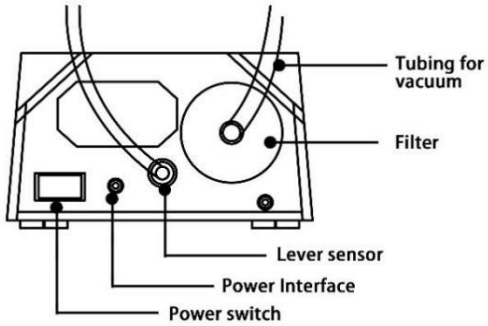
Main Parts	Material
Shell	ABS
Silicone Tube	Silica gel
Handle	POM
Needle	Stainless steel
Vacuum Bottle	PP
Bottle Cap	Polypropylene
Cap Probe	Stainless Steel
Hydrophobic Filter	PP

Notes:
Please notice the table is just a directional guide not the manufacturer's commitment. Please read the user manual carefully before use and perform preliminary tests where necessary to determine suitability. Good laboratory practice would be to rinse out the liquid handing unit at the end of each day with distilled water to prevent corrosive liquids being left in contact with the parts for too long.

Overview

Cat.no.: 181-0658





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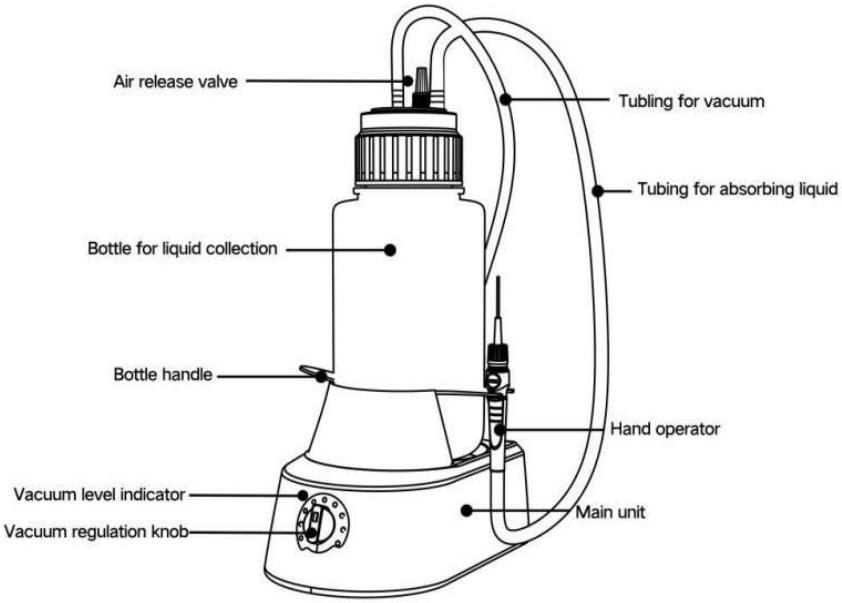
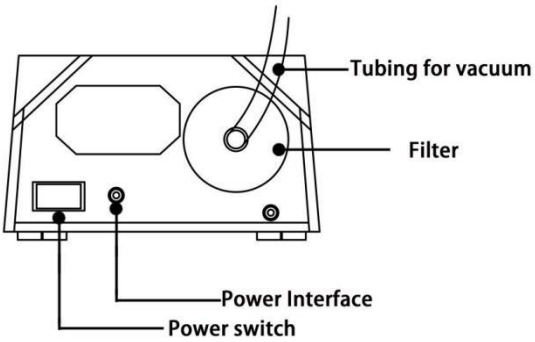




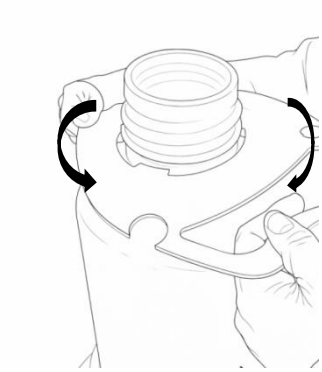
Description of Parts

Main unit	Main part of the instrument, has integrated vacuum pump
Bottle	Bottle for liquid collection
Lid	Lid with opening for tubing. Have the fast-inserting joints, lever sensor interface and the air release valve Note: Please hold the metal shrapnel on the double sealing quick connect plug - out (socket) and then pull out the tubes from the fast-inserting joint
Hand operator	Aspirate liquid by pressing the button of the hand operator
Level sensor	Prevents liquid overflow by stopping the pump when the maximum fill level is reached. As soon as the overflow detected, the pump switches off and alarms
Tubing for vacuum	Connect the main unit to the bottle, providing negative pressure environment
Tubing for absorbing liquid	Connect the hand operator to bottle, absorbs the liquid to the bottle
Bottle handle	Between the lid and the bottle for moving the bottle
Air release valve	Unscrew the valve to release the vacuum before open the lid.
Vacuum level indicator	Indicates the vacuum degree. They will keep flashing until the target vacuum is reached
Vacuum regulation knob	Rotate to adjust the target vacuum
Filter	Hydrophobic filter prevents contamination/aerosols
Power interface	Connect the power cable
Power switch	Power on/off

Operation

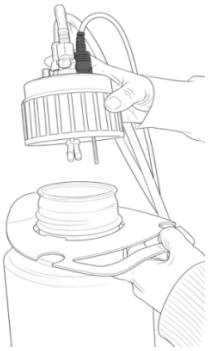
1) Installation: Piping installation as above shown to ensure the pipeline connected, no leakage. (Non-contact Liquid Level Sensor for 4 liters model is optional).

For 4L Vacuum Aspiration System, Cat. no. 181-0658

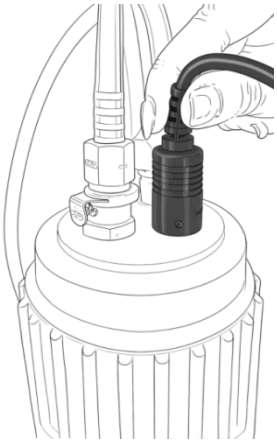


Attach the multi-purpose bracket: Securely install the bracket on the waste container, and tighten the waste container lid by turning it counterclockwise. Turn clockwise to remove the bracket.

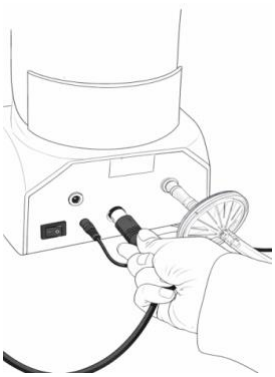
Ensure the lid is well sealed so the system can maintain stable negative pressure during aspiration. Make sure the air release valve closed.

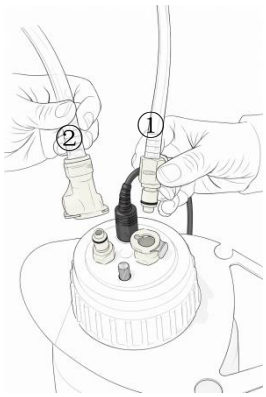


Install the bottle cap.

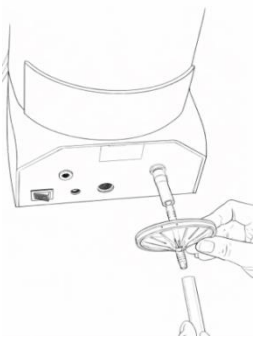


Connect the liquid level sensor cable: Insert the sensor plug into the corresponding port on the vacuum aspirator and ensure it is fully seated so the liquid level monitoring function operates properly.





Connect the vacuum tubing①and hydrophobic filter. Connect the end of the vacuum tube with the self-locking connector to the corresponding self-locking port on top of the aspirator until you hear a "click," indicating it is locked. Connect the other end of the vacuum tube to the hydrophobic filter.

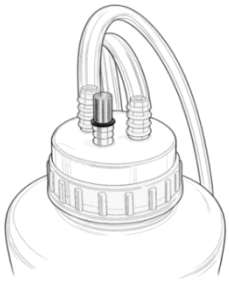


Connect the Hydrophobic Filter to vacuum tubing①.

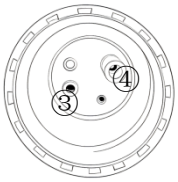
Connect the Aspiration Handle to aspiration tubing②.

For 2L Vacuum Aspiration System, Cat. no. 181-0659

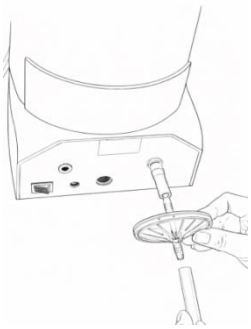
Place the multi-purpose bracket into the recess on the main unit.



Simply connect the vacuum tubing③and aspiration tubing④ to the ports on top of the vacuum aspirator. The connections at the other ends are the same as 4L Cat. No. 181-0658



After opening the top cover of the vacuum aspirator, the silicone short tube underneath has one end that is the aspiration line.



Connect the Hydrophobic Filter to vacuum tubing③.

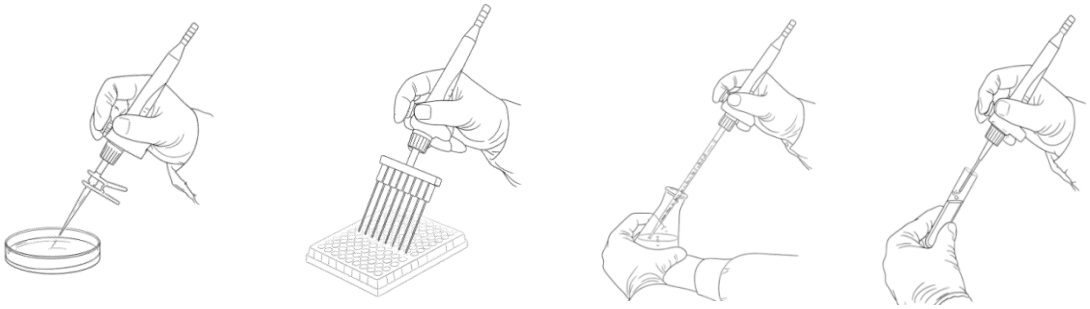
Connect the Aspiration Handle to aspiration tubing④.

2) Make sure the air release valve closed.

3) Switch on the device.

4) Adjust the Vacuum regulation knob clockwise to increase the setting vacuum level, vacuum level indicator will turn on in sequence. Adjust the Vacuum regulation knob anticlockwise to decrease the setting vacuum level, vacuum level indicator will turn off in sequence.

5) When the vacuum level indicator remains continuously illuminated, the set vacuum level has been reached.



Note: The level sensor is used to prevent the overflowing of the liquid. As soon as the overflow detected, the pump switches off and alarms. Empty the bottle or replace it with an empty bottle as soon as possible.

6) Power off.

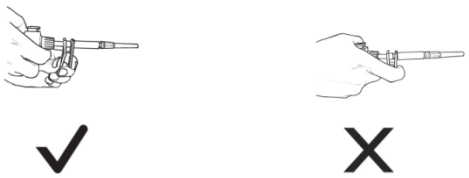
7) Unscrew the valve to release the vacuum.

Note: When you want to open the lid, please release the vacuum first. Before reuse, tighten the cap and close the vent.

Prevent liquid or foam from entering the filter. If the filter becomes wet or contaminated, replace it immediately.

The hydrophobic filter can block aqueous solutions, but its ability to block non-polar liquids is limited.

Correct Use of the Single-Channel Tip Ejector.



8) Please make sure the bottle lid is taken off or unscrewed during autoclaving.

Use of the Level Sensor

This aspirator comes with a built-in level sensor, enabling basic liquid level monitoring. It also supports the flexible integration of a high-precision Non-contact Liquid Level Sensor as an optional component, allowing adaptation to waste containers of various capacities and complex operating conditions. This improves operational safety.

When the liquid level inside the bottle progressively rises and approaches the pre-set high-level threshold, the level sensor detects this dynamic change in real time& triggers an anti-overflow protection mechanism. This prevents liquid from spilling and wetting critical internal components—such as tubing, pumps, and control modules—thereby reducing the risk of equipment short circuits, corrosion, and other potential failures.

Once the level sensor detects that the liquid has reached the container's physical upper limit, it immediately sends a trigger signal to the equipment control system, causing the pump to enter standby mode. This effectively eliminates the risk of leakage or overflow caused by overfilling.

Simultaneously, the control system activates an audible alarm. Upon detecting that the liquid has reached the critical level, the machine emits a continuous buzzer sound to promptly alert the operator to empty the container. Once the operator completes the drainage and the liquid level returns to a safe range, the alarm is automatically cleared and normal operation resumes.

Note: When the liquid reaches the sensor's alarm level, the pump stops operating, but the liquid level may continue to rise briefly. This occurs due to the residual vacuum inside the container, which does not dissipate instantly. This is a normal phenomenon.

Non-contact Liquid Level Sensor for 4L (Optional accessory) Installation Instructions

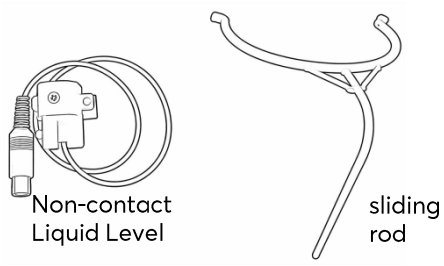


Figure1

1- Snap the open ring end of the sliding rod into the bottle opening as shown in Figure 2

Figure 2

2- Insert the Non-contact Liquid Level Sensor into the vertical end of the sliding rod from the bottom up (Figure 3)
3- Then plug the external sensor cable into the sensor connector at the back of the main unit (Figure 3)

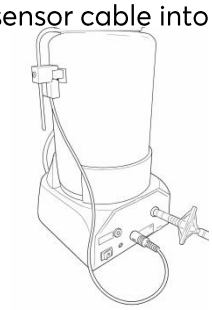


Figure3

4- There are three screws, including a sensor fixing screw (metal), two electrode sheet affixing screws (nylon)
Tightening these three screws with screwdriver (Figure 4)

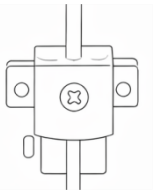


Figure 4

Note: There is a sensitivity adjustment function on the right side of the Non-contact Liquid level sensor, which requires the use of a one-pronged screwdriver to turn clockwise or counterclockwise to raise or lower the sensor's sensitivity value.

5- After the installation is completed, normal operation can be used, no obvious difference from internal level sensor.

Troubleshooting

Review the information in the table below to troubleshoot operating problems.

Problem	Possible Cause	Remedy
Equipment not running; no vacuum	No power line voltage	Insert mains adapter plug into suitable power outlet
	No DC supply	Connect mains adapter to instrument
	Pump switched off	Turn power switch to "ON" (I). Ensure that LED indicator under bottle is lit
Suction power Inadequate or pump runs constantly	Suction power selected too low	Turn control knob clockwise
	Leak in vacuum system	Check tubes and filters
		Check lid and tighten if necessary
		Check if sealing plug/venting screw on bottle lid is leaking
		Ensure that filter is fully tightened on to unit
		Ensure that leak flow of hand tool is not excessively high
	Bottle full; liquid is sucked into filter	Remove wet filter and replace with new dry filter
		Empty excess liquid from existing bottle or replace with new empty bottle
	Tubes Blocked	Clean or replace tubes
Alarm level detection no working(4L)	Sensor cable incorrectly connected	Check that cable is correctly connected to device and lid
	Liquid in bottle has reached the sensor	Empty excess liquid from bottle

User replaceable spare parts

Cat. No.	Description	181-0659 (2L)	181-0658（4L）
181-0663	Hydrophobic filter 0.45μm	v	v
181-0666	Single-Channel needle Φ1.5mm, 40mm Long	v	v
181-0667	Single-Channel needle Φ1.5mm, 120mm Long	v	v
181-0668	Single-Channel needle Φ2.5mm, 40mm Long	v	v
181-0669	Single-Channel needle Φ2.5mm, 120mm Long	v	v
181-0671	8 channel needle Φ1.5mm	v	v
181-0670	8-channel tip adapter 200μl tip	v	v
181-0665	Tip detrusion adapter200μl&1000μltip(2L)	v	
181-0662	2L Vacuum bottle PPCO with Barbed Tube Fittings Cap	v	
181-0661	4L PPCO Vacuum bottle with Quick Release Couplings cap		v
181-0664	Tip detrusion adapter200μl&1000μl tip(4L)		v
181-0660	Non-contact Liquid Level Sensor (4L)-Optional		v

Technical service

Web Resources

Visit the VWR website at**www.vwr.com** for:
• Complete technical service contact information
• Access to the VWR Online Catalogue, and information about accessories and related products
• Additional product information and special offers
Contact us For information or technical assistance contact your local VWR representative or visit.www.vwr.com.

Warranty

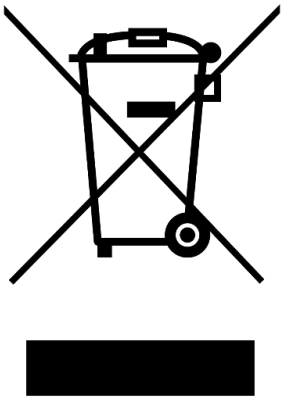
VWR warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of delivery. If a defect is present, VWR will, at its option and cost, repair, replace, or refund the purchase price of this product to the customer, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. If the required maintenance and inspection services are not performed according to the manuals and any local regulations, such warranty turns invalid, except to the extent, the defect of the product is not due to such non-performance.

Items being returned must be insured by the customer against possible damage or loss. This warranty shall be limited to the aforementioned remedies. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

Compliance with local laws and regulations

The customer is responsible for applying for and obtaining the necessary regulatory approvals or other authorizations necessary to run or use the Product in its local environment. VWR will not be held liable for any related omission or for not obtaining the required approval or authorisation, unless any refusal is due to a defect of the product.

Equipment disposal



This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste.

It is the user's responsibility to dispose of the equipment correctly. It's also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment.

For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment.

By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.
Thank you

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